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PORT OF PORTLAND

May 25, 2001

Mr. Monty Morshed, P.E.
Solid Waste Program
Department of Environmental Quality
2020 SW Fourth Ave., Suite 400
Portland, OR 97201-4987

Re: **Port of Portland's Dredge Material Rehandle Facility–Pilot Project**

Dear Mr. Morshed:

Thank you for the opportunity to meet with you, Eric Blischke, and Kim Cox to discuss the Port of Portland's (Port's) Dredge Material Rehandling Facility Pilot Project on May 8, 2001. As we had planned when we met 1 year ago (May 10, 2000) to discuss the rehandle facility, the facility now contains dredged material from our Terminal 5 and Terminal 6 facilities. As discussed most recently, we would like to move the dewatered dredged material to the upland area of Berth 602 (Terminal 6).

The purpose of this letter is to inform DEQ of the Port's intention of reusing the material from the pilot project as fill and voluntarily to request a determination that this activity is not subject to DEQ permitting under OAR section 34-093-0050. Because of a tight schedule for contract bidding and obtaining other permits, we would very much appreciate a response from DEQ by June 8, 2001.

Placement of Dredged Material

The dewatered dredged material is scheduled for removal in September 2001. We are proposing to transport it to the western area of Terminal 6 and place it in the upland portion of Berth 602. The entire volume of material dredged from Terminal 5 and Terminal 6 during our 2000/2001 dredging operation will be placed at this location of Berth 602.

Nature of the Fill Activity

The reuse of the dewatered dredged material from the Willamette and Columbia Rivers does not trigger any obligation to obtain a permit from DEQ under OAR section 340-093-0050. Subsection 340-093-0050(1) states that "[e]xcept as provided by section (3) of this

rule, no person shall establish, operate, maintain or substantially alter, expand, improve or close a disposal site . . . until the person owning or controlling the disposal site obtains a permit therefor from the Department." Specifically excluded from OAR's section 340-093-0030(30) definition of a regulated "disposal facility" is "a site that is used by the owner or a person in control of the premises to dispose of soil, rock, concrete or other similar non-decomposable material. . . ." The dewatered dredged material, derived from sediments in the rivers that had been transported and passively deposited in the Port's berthing areas by natural processes, are non-decomposable material similar to soil. The Port performed an environmental evaluation of the dredged material and determined that the material is protective of human health and the environment, consistent with the substantive requirements of DEQ's solid waste and remedial action cleanup regulations, as discussed below.

Nonhazardous Determination

The evaluation of toxicity characteristics is presented in Table 1. The Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311, requires a 20-to-1 dilution by weight of soil with laboratory leachant. The resultant leachate is then compared to the toxicity characteristic criteria listed in 40 CFR 261.24. Because of the TCLP method requirements, soil samples with concentrations less than 20 times the toxicity characteristic criteria cannot leach at concentrations that would be designated as a hazardous waste. As shown on Table 1, the bulk sediment concentrations in the dredged material are well below the twenty times toxicity characteristic criteria.

The dredged material from Terminals 5 and Terminal 6 does not exhibit toxicity or any other characteristic in 40 CFR 261.24 and is therefore not a hazardous waste.

Environmental Evaluation

An evaluation was performed to determine if the dewatered dredged material is similar to soil or, to the contrary, poses a threat to human health or the environment. In particular, Synthetic Precipitation Leaching Procedure (SPLP) was used on representative samples of the dredged material to evaluate protection of groundwater at the proposed placement location. Evaluation of human health risk from direct contact with the dredged material, according to the requirements of DEQ's remedial action regulations, was also conducted.

Protection of Groundwater. The SPLP results from the dredged material are compared to the reference leachate concentrations of the Solid Waste Program in Table 2. In all cases, the SPLP leachate concentrations are lower than the reference leachate concentrations, or undetected at an appropriate quantitation limit. Therefore, the dredged material is protective of groundwater.

Protection of Direct Contact Risk. The bulk sediment concentrations of the dredged material were compared to EPA Region 9 Preliminary Remediation Goals (PRGs) for direct contact risk to humans in Table 3. PRGs for direct contact risk have been developed for both residential and industrial scenarios. PRGs are recognized under DEQ's remedial action regulations as appropriate risk-based screening concentrations. All constituents in the material are below the residential PRGs, with two exceptions—arsenic and benzo(a)pyrene. These constituents are discussed below.

Arsenic concentrations ranged from 2.7 to 5.2 mg/kg in the dredged material. These concentrations are above the residential PRG of 0.39 mg/kg. However, natural background arsenic concentrations in the vicinity of the Cascade volcanic province routinely exceed this PRG. In a regional study of natural background soil concentrations, the Washington State Department of Ecology determined that the background arsenic concentration in Clark County was 6 mg/kg (Ecology, 1994). In addition, background arsenic concentrations of levels up to 10 to 12 mg/kg have been documented in site-specific studies within the Portland metropolitan area. Therefore, the arsenic concentrations in the dredged material are typical of natural background concentrations for the Lower Columbia River area.

The concentrations of benzo(a)pyrene at Terminal 6 were 23 and 24 µg/kg, well below the residential PRG of 62 µg/kg. However, dredged material from Terminal 5 contained a benzo(a)pyrene concentration of 97 µg/kg, somewhat higher than the residential PRG. The material now located at the Suttle Road rehandling facility contains a mixture of material from Terminal 5 and Terminal 6; but less than 25 percent by volume was derived from Terminal 5 (approximately 1,500 cy of material came from Terminal 5 while 6,500 cy came from Terminal 6). In addition, biodegradation of organic chemicals such as benzo(a)pyrene should be stimulated in an aerobic upland environment, further reducing concentrations. As a result, the average benzo(a)pyrene concentrations in the rehandling facility will be below the residential PRG. Also, the concentrations of benzo(a)pyrene was below the residential levels listed in Table 1 of OAR 340-122-045 of 100 mg/kg for both Terminal 5 and Terminal 6. Therefore, the dewatered material does not pose a significant risk to human health or the environment.

Conclusion

Based on the above information, the Port is voluntarily seeking a determination that its fill activity is not regulated under OAR 340-093 as the creation of a disposal site and can proceed as planned.

The Port appreciated the opportunity to work with DEQ from the development and dredging phases, and now the final disposition phase of this pilot project. If there are any questions or comments, please do not hesitate to call me at 503/240-2011.

Sincerely,

John L. Childs

John L. Childs, P.E.
Marine Environmental

cc:
Eric Blischke, DEQ, Waste Management and Cleanup
Kim Cox, DEQ, Waste Management and Cleanup
Tom Melville, DEQ, Water Quality
John Malek, EPA, Sediment Management Program
Mark Siipola, Army Corps of Engineers
Sebastian Degens, Port of Portland Marine Planning & Development
Todd Thornburg/Hart Crowser

Table 1 - Dredged Material Screening for Nonhazardous Determination
Port of Portland
Portland, Oregon

Lab ID Sample ID	TCLP[1] mg/L	TCLP (X20)[2] mg/kg	K2007327-011 T5-00-COMP	K2007327-001 T6-00-COMP1	K2007327-002 T6-00-COMP2
Metals in mg/kg					
Arsenic, Total	5.0	100	5.2	2.7	2.9
Cadmium, Total	1.0	20	0.88	0.69	0.7
Chromium, Total	5.0	100	26.6	10	10.9
Lead, Total	5.0	100	21.6	9.79	10.3
Mercury, Total	0.2	4	0.08	0.06	0.11
Silver, Total	5.0	100	0.32	0.12	0.14
Phenols in mg/kg					
Pentachlorophenol (PCP)	100	2,000	0.02 U	0.02 U	0.02 U
Semivolatiles in mg/kg					
Hexachlorobutadiene	5	100	0.004 U	0.004 U	0.004 U
1,4-Dichlorobenzene	8	150	0.004 U	0.004 U	0.004 U
Hexachlorobenzene	0.13	2.60	0.0008 U	0.0007 U	0.0007 U
Pesticide/PCBs in mg/kg					
Heptachlor	0.008	0.160	0.0017 U	0.0017 U	0.0017 U
Chlordane	0.03	0.60	0.0017 U	0.0017 U	0.0017 U
gamma-BHC (Lindane)	0.40	8.00	0.0017 U	0.0017 U	0.0017 U

Notes:

U: Not detected at the indicated method detection limit

TCLP: Toxicity Characteristic Leachate Procedure

[1] Maximum Leachate Concentration for the Toxicity Characteristic (Table 1, 40 CFR 261.24).

[2] Based on 20:1 dilution per TCLP Method 1311 (See text for details).

Table 2 - Dredged Material Screening for Groundwater Protection
Port of Portland
Portland, Oregon

	Ground Water Monitoring PQL	Leachate Reference Concentrations		SPLP K2007327-001 T6-00-COMP1
		Source A	Source B	
Metals in µg/L				
Antimony, Total	300	6		20 U
Arsenic, Total	500		4	20 U
Cadmium, Total	40	5	500	10 U
Chromium, Total	70	100	10,000	10 U
Copper, Total	60		100,000	20 U
Lead, Total	40		2,000	50 U
Mercury, Total	2	2	200	1 U
Nickel, Total	50	100	10,000	20 U
Silver, Total	70		5,000	10 U
Zinc, Total	20	10,000		393
Organotins in µg/L				
Di-n-butyltin				0.004 U
Tetra-n-butyltin				0.01 U
Tri-n-butyltin (TBT)				0.005 U
n-Butyltin				0.03 J
LPAHs in µg/L				
2-Methylnaphthalene	10			0.04 UJ
Acenaphthene	10		60,000	0.07 J
Acenaphthylene	10			0.1 UJ
Anthracene	10		700,000	0.1 UJ
Fluorene	10		100,000	0.03 UJ
Naphthalene	10		1,000	0.15 UJ
Phenanthrene	10			0.04 UJ
Total LPAHs				0.07 J
HPAHs in µg/L				
Benzo(a)anthracene	10		2	0.007 J
Benzo(a)pyrene	10	0.2	2	0.01 J
Benzo(b)fluoranthene	10		2	0.02 J
Benzo(k)fluoranthene	10		2	0.01 J
Total Benzofluoranthenes				0.03 J
Benzo(g,h,i)perylene	10			0.009 J
Chrysene	10		2	0.01 J
Dibenz(a,h)anthracene	10		2	0.008 J
Fluoranthene	10		60,000	0.01 J
Indeno(1,2,3-cd)pyrene	10		2	0.009 J
Pyrene	10		100,000	0.008 J
Total HPAHs				0.101 J
Phenols in µg/L				
2,4-Dimethylphenol	10			0.5 UJ
2-Methylphenol				0.5 UJ
4-Methylphenol				0.5 UJ
Pentachlorophenol (PCP)	50	1	80	2 UJ
Phenol	10			0.2 UJ

Please refer to notes at the end of this table.

Table 2 - Dredged Material Screening for Groundwater Protection
Port of Portland
Portland, Oregon

	Ground Water Monitoring PQL	Leachate Reference Concentrations		SPLP K2007327-001 T6-00-COMP1
		Source A	Source B	
Phthalates in µg/L				
Bis(2-ethylhexyl) Phthalate	10		100	2 UJ
Butyl Benzyl Phthalate	10			0.2 UJ
Di-n-butyl Phthalate	10			0.2 UJ
Di-n-octyl Phthalate	10			0.02 J
Diethyl Phthalate	10			0.04 J
Dimethyl Phthalate	10			0.02 J
Misc. Semivolatiles in µg/L				
Benzoic Acid				1 UJ
Benzyl Alcohol	20			0.02 J
Dibenzofuran	10			0.03 UJ
Hexachlorobutadiene	10			0.1 UJ
N-Nitrosodiphenylamine	10			0.1 UJ
1,2,4-Trichlorobenzene	10	70		0.1 UJ
1,2-Dichlorobenzene	10			0.1 UJ
1,3-Dichlorobenzene	10			0.1 UJ
1,4-Dichlorobenzene	10			0.1 UJ
Hexachlorobenzene	10	1	8	0.1 UJ
Hexachloroethane	10		3,000	0.1 UJ
Pesticide/PCBs in µg/L				
4,4'-DDD	0.1		50	0.02 U
4,4'-DDE	0.05		40	0.03 U
4,4'-DDT	0.1		30	0.02 U
Aldrin	0.05		0.6	0.04 U
Dieldrin	0.05		0.06	0.02 U
Endosulfan I	0.1		0.03	0.02 U
Endosulfan II	0.05		0.03	0.02 U
Endosulfan Sulfate	0.5			0.01 U
Endrin	0.1	2	2	0.04 U
Endrin Aldehyde	0.2			0.02 U
Endrin Ketone				0.02 U
Heptachlor	0.05	0.4	0.008	0.05 U
Heptachlor Epoxide	1	0.2	0.02	0.05 U
Methoxychlor	2	40		0.03 UJ
Toxaphene	2	3	0.6	0.3 U
alpha-BHC	0.05		0.3	0.01 U
alpha-Chlordane	0.1	2	9	0.02 U
beta-BHC	0.05			0.02 U
delta-BHC	0.1			0.05 U
gamma-BHC (Lindane)	0.05	0.2	2	0.02 U
gamma-Chlordane	0.1	2	9	0.02 U

Please refer to notes at the end of this table.

Table 2 - Dredged Material Screening for Groundwater Protection
Port of Portland
Portland, Oregon

	Ground Water Monitoring	Leachate Reference Concentrations		SPLP
	PQL	Source A	Source B	K2007327-001 T6-00-COMP1
Pesticide/PCBs (cont.) in µg/L				
Aroclor 1016				1 U
Aroclor 1221				2 U
Aroclor 1232				1 U
Aroclor 1242				1 U
Aroclor 1248				1 U
Aroclor 1254				1 U
Aroclor 1260				1 U
Total PCBs	50	0.5	2	2 U

Notes:

-- Not Available

U: Not detected at the indicated method detection limit

J: Estimated value

UJ: not detected; the associated quantitation limit is an estimated value

Table 3 - Dredged Material Screening for Direct Contact Risk
Port of Portland
Portland, Oregon

Hart Crowser
J-15045

Lab ID / Sample ID	EPA-9 PRG[a] Residential	EPA-9 PRG[a] Industrial	K2007327-011 T5-00-COMP	K2007327-001 T6-00-COMP1	K2007327-002 T6-00-COMP2
Conventionals in mg/kg					
Ammonia as Nitrogen			203	176	152
Carbon, Total Organic (TOC)			1.83	1.17	1.17
Sulfide			11.8 J	1.7 J	28.8 J
Total Solids in %			52.8	58.1	58.4
Metals in mg/kg					
Antimony, Total	31	820	0.42 J	0.26 J	0.42 J
Arsenic, Total	0.39	2.7	5.2	2.7	2.9
Cadmium, Total	37	810	0.88	0.69	0.7
Chromium, Total	30	64	26.6	10	10.9
Copper, Total	2,900	76,000	40.9	28.7	19.3
Lead, Total	400	750	21.6	9.79	10.3
Mercury, Total	23	610	0.08	0.06	0.11
Nickel, Total	1,600	41,000	23	11.5	11.5
Silver, Total	390	10,000	0.32	0.12	0.14
Zinc, Total	23,000	100,000	147	93.1	94.5
Organotins in µg/L					
Di-n-butyltin			0.01	0.01 U	0.01 U
Tetra-n-butyltin			0.01 U	0.01 U	0.01 U
Tri-n-butyltin (TBT)	18,000	260,000	0.074	0.087	0.096
n-Butyltin			0.04 U	0.03 U	0.04 U
LPAHs in µg/kg					
Acenaphthene	3,700,000	38,000,000	16	23	22
Acenaphthylene			8 J	1 J	0.8 J
Anthracene	22,000,000	100,000,000	20	11	10
Fluorene	2,600,000	33,000,000	15	17	16
Naphthalene	56,000	190,000	27	6 J	5 J
Phenanthrene			90	110	68
Total LPAHs			176	168	121.8
HPAHs in µg/kg					
Benzo(a)anthracene	620	2,900	96	30	30
Benzo(a)pyrene	62	290	97	24	23
Benzo(b)fluoranthene	620	2,900	96	30	36
Benzo(k)fluoranthene	6,200	29,000	81	25	26
Total Benzofluoranthenes			177	55	62
Benzo(g,h,i)perylene			37	10 J	9 J
Chrysene	62,000	290,000	120	54	48
Dibenz(a,h)anthracene	62	290	7 J	3 J	2 J
Fluoranthene	2,300,000	30,000,000	190	110	81
Indeno(1,2,3-cd)pyrene	620	2,900	40	13	10 J
Pyrene	2,300,000	54,000,000	240	88	69
Total HPAHs			908	387	304
Phenols in µg/kg					
2,4-Dimethylphenol	1,200,000	18,000,000	60 UJ	60 UJ	60 UJ

Table 3 - Dredged Material Screening for Direct Contact Risk
Port of Portland
Portland, Oregon

Hart Crowser
J-15045

Lab ID / Sample ID	EPA-9 PRG[a] Residential	EPA-9 PRG[a] Industrial	K2007327-011 T5-00-COMP	K2007327-001 T6-00-COMP1	K2007327-002 T6-00-COMP2
2-Methylphenol	3,100,000	44,000,000	40 U	40 U	40 U
3- and 4-Methylphenol Coelution			60 U	60 U	60 U
4-Methylphenol	310,000	4,400,000		60 U	
Pentachlorophenol (PCP)	3,000	11,000	20 U	20 U	20 U
Phenol	37,000,000	100,000,000	4 UJ	3 UJ	2 U

Table 3 - Dredged Material Screening for Direct Contact Risk
Port of Portland
Portland, Oregon

Hart Crowser
J-15045

Lab ID / Sample ID	EPA-9 PRG[a] Residential	EPA-9 PRG[a] Industrial	K2007327-011 T5-00-COMP	K2007327-001 T6-00-COMP1	K2007327-002 T6-00-COMP2
Phthalates in µg/kg					
Bis(2-ethylhexyl) Phthalate	35,000	180,000	100 J	40 J	40 J
Butyl Benzyl Phthalate	12,000,000	100,000,000	1 U	1300	14
Di-n-butyl Phthalate	6,100,000	88,000,000	5 J	47	4 U
Di-n-octyl Phthalate	1,200,000	10,000,000	2 U	2 U	2 U
Diethyl Phthalate	49,000,000	100,000,000	2 U	2 U	2 U
Dimethyl Phthalate	100,000,000	100,000,000	0.6 U	0.9 J	0.7 J
Misc. Semivolatiles in µg/kg					
Benzoic Acid	100,000,000	100,000,000	40 R	40 R	40 R
Benzyl Alcohol	18,000,000	100,000,000	20 U	20 U	20 U
Dibenzofuran	290,000	5,100,000	8 J	9.8	9.2
Hexachlorobutadiene	6,200	32,000	4 U	4 U	4 U
N-Nitrosodiphenylamine	99,000	500,000	4 U	4 U	4 U
1,2,4-Trichlorobenzene	650,000	3,000,000	6 U	6 U	6 U
1,2-Dichlorobenzene	370,000	370,000	6 U	6 U	6 U
1,3-Dichlorobenzene	13,000	52,000	6 U	6 U	6 U
1,4-Dichlorobenzene	3,400	8,100	4 U	4 U	4 U
Hexachlorobenzene	300	1,500	0.8 U	0.7 U	0.7 U
Hexachloroethane	35,000	180,000	6 U	6 U	6 U
Pesticide/PCBs in µg/kg					
4,4'-DDD	2,400	17,000	4.6	3.6	4.8
4,4'-DDE	1,700	12,000	5.9	4.3	4.9
4,4'-DDT	1,700	12,000	6.7 U	6.7 U	6.7 U
Total DDT			10.5	7.9	9.7
Aldrin	29	150	1.7 U	1.7 U	1.7 U
Dieldrin	30	150	2.3 U	2.3 U	2.3 U
Heptachlor	110	550	1.7 U	1.7 U	1.7 U
alpha-Chlordane	1,600	11,000	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)	440	2,900	1.7 U	1.7 U	1.7 U
gamma-Chlordane	1,600	11,000	1.7 U	1.7 U	1.7 U
Aroclor 1016	3,900	29,000	10 UJ	10 UJ	10 UJ
Aroclor 1221	220	1,000	10 UJ	10 UJ	10 UJ
Aroclor 1232	220	1,000	10 UJ	10 UJ	10 UJ
Aroclor 1242	220	1,000	10 UJ	10 UJ	10 UJ
Aroclor 1248	220	1,000	10 UJ	10 UJ	10 UJ
Aroclor 1254	220	1,000	10 UJ	10 UJ	10 UJ
Aroclor 1260	220	1,000	15 J	10 UJ	10 UJ
Total PCBs	220	1,000	15 J	10 UJ	10 UJ

Notes:

(a): EPA Region 9 Preliminary Remediation Goals (PRGs) for residential and industrial exposures

– Not Available

R: Rejected

U: Not detected at the indicated method detection limit

Table 3 - Dredged Material Screening for Direct Contact Risk
Port of Portland
Portland, Oregon

Hart Crowser
J-15045

Lab ID	EPA-9 PRG[a]		K2007327-011	K2007327-001	K2007327-002
Sample ID	Residential	Industrial	T5-00-COMP	T6-00-COMP1	T6-00-COMP2

J: Estimated value
UJ: not detected; the associated quantitation limit is an estimated value
Exceeds PRG residential direct contact exposure

Bcc: Trey Harbert
Pad Quinn
David Ashton
Marcel Hermans
Dorothy Sperry